

1 WHAT IS CLAIMED IS:

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3 1. An anti-adhesion patch, comprising:
4 a collagenous material; and
5 at least one non-living cellular component.

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7 2. The anti-adhesion patch of claim 1, wherein said collagenous material is collagen
8 type I or a combination of collagen type I and a co-component.

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10 3. The anti-adhesion patch of claim 2, wherein said co-component is selected from
11 the group consisting of elastin, interstitial collagens, collagen type III, V and IX, glycoproteins
12 and proteoglycans.

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14 4. The anti-adhesion patch of claim 1, wherein said collagenous material is from a
15 natural source or a recombinant source.

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17 5. The anti-adhesion patch of claim 1, wherein said non-living cellular component is
18 from a natural source or a recombinant source.

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20 6. The anti-adhesion patch of claim 5, wherein said non-living cellular component
21 from a natural source is human connective tissue cell.

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23 7. The anti-adhesion patch of claim 6, wherein said human connective tissue cell is a
24 fibroblast cell or a vascular smooth muscle cell.

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26 8. The anti-adhesion patch of claim 7, wherein said fibroblast cell is a dermal
27 fibroblast cell.

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29 9. The anti-adhesion patch of claim 5, wherein said non-living cellular component
30 from a recombinant source is an engineered cell.

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32 10. A method of constructing an anti-adhesion patch, comprising the steps of:
33 (a) mixing human connective tissue cells with a collagenous material;
34 (b) incubating the resulting mixture in a matrix organization medium to
35 stimulate the cells to adapt to and organize the collagenous material into a mono-cellular tissue
36 equivalent having desirable dimensions and mechanical properties;

- (c) treating the tissue equivalent to eliminate the cells; and
- (d) confirming the absence of viable cells in the tissue equivalent after the treatment, wherein said tissue equivalent may be used as an anti-adhesion patch.

11. The method of claim 10, wherein said collagenous material is in an acid solution and first neutralized at 4°C before the mixing step.

12. The method of claim 11, wherein said acidic solution is hydrochloric solution.

13. The method of claim 10, wherein said human connective tissue cell is a fibroblast cell or a vascular smooth muscle cell.

14. The method of claim 13, wherein said fibroblast cell is a dermal fibroblast cell.

15. The method of claim 10, wherein said collagenous material is collagen type I or a combination of collagen type I and a co-component.

16. The method of claim 15, wherein said co-component is selected from the group consisting of elastin, interstitial collagens, collagen type III, V and IX, glycoproteins and proteoglycans.

17. The method of claim 10, wherein said collagenous material is from a natural source or a recombinant source.

18. The method of claim 10, wherein said matrix organization medium contains fetal bovine serum.

19. The method of claim 10, wherein said matrix organization medium is a serum-free cocktail of growth factors selected from the group consisting of fibroblast growth factor (FGF), epidermal growth factor (EGF), platelet derived growth factor (PDGF), transforming growth factor beta (TGF_B) and a mixture thereof.

20. The method of claim 19, wherein said cocktail of growth factors are in the presence of growth promoters.

1 21. The method of claim 20, wherein said growth promoter includes transferrin and
2 insulin.

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4 22. The method of claim 10, wherein the cell-elimination treatment includes nutrient
5 deprivation, antibiotics treatment and anti-mitotics treatment.

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7 23. The method of claim 22, wherein said antibiotics includes puromycin,
8 amphotericin and mitomycin.

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10 24. The method of claim 22, wherein said anti-mitotics is 5-flurouracil.

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12 25. A method for preventing tissue adhesions between organs and other tissues being
13 operated upon during surgical procedures, comprising the step of:

14 attaching an anti-adhesion patch to one of the surfaces of the tissues being
15 operated upon, wherein said anti-adhesion patch comprises a collagenous material and at least
16 one non-living cellular component, wherein said anti-adhesion patch participates in formation of
17 adhesion and is biodegradable during the recovery.

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19 26. The method of claim 25, wherein said tissue being operated upon is a heart.

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21 27. The method of claim 25, wherein said anti-adhesion patch is attached to the
22 traumatized tissues using a tissue glue.

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24 28. The method of claim 27, wherein said tissue glue is a fibrin tissue glue or another
25 type of bio-adhesive.

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27 29. The method of claim 28, wherein said another type of bio-adhesive is Nitinol
28 Coupler.

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